

CLAIMS

1. A multi-speed power transmission comprising:
 - an input shaft;
 - an output shaft;
 - a stationary housing member;
 - 5 a first planetary gearset having a sun gear member continuously connected with said input shaft, a ring gear member, and a planet carrier member;
 - a second planetary gearset having a sun gear member, a ring gear member, and a planet carrier member;
 - 10 a third planetary gearset having a sun gear member, a ring gear member, and a planet carrier member;
 - a fourth planetary gearset having a sun gear member, a ring gear member, and a planet carrier member;
 - a first synchronizer clutch having two active positions for
 - 15 selectively individually interconnecting said ring gear member and said planet carrier member of said first planetary gearset with said stationary housing and a neutral position;
 - a second synchronizer clutch having three active positions to selectively interconnect said ring gear member, said planet carrier member,
 - 20 and both said ring gear member and said sun gear member of said first planetary gearset with said sun gear member of said second planetary gearset;
 - a third synchronizer clutch having two active positions for selectively interconnecting said ring gear member and said sun gear member
 - 25 of said second planetary gearset with a fourth synchronizer clutch;

said fourth synchronizer clutch being selectively operable in two active positions to interconnect said third synchronizer clutch individually selectively with said ring gear member and said planet carrier member of said third planetary gearset;

30 a fifth synchronizer clutch having two active positions for selectively interconnecting individually with said ring gear member and said planet carrier member of said third planetary gearset with a sixth synchronizer clutch;

35 said sixth synchronizer clutch being selectively operable in two active positions to individually interconnect said fifth synchronizer clutch with said ring gear member and said planet carrier member of said fourth planetary gearset;

40 a seventh synchronizer clutch having two active positions and being selectively engageable therein to individually interconnect said ring gear member and said planet carrier member of said fourth planetary gearset with said output shaft;

 said sun gear members of said third and said fourth planetary gearsets being continuously interconnected with said stationary housing;

45 said planet carrier member of said second planetary gearset being continuously interconnected with said transmission housing; and

 said synchronizer clutches being selectively engageable in a plurality of combinations to establish at least seventeen forward speed ratios and a reverse speed ratio between said input shaft and said output shaft through said planetary gearset.

2. The multi-speed power transmission defined in Claim 1 further comprising:

 an input clutch selectively connectible between a prime mover and said input shaft.

3. The multi-speed power transmission defined in Claim 2
further wherein:

each of said synchronizer clutches is selectively active in at least
one of their respective active positions to establish eight of said forward
5 speeds and said one reverse speed.

4. The multi-speed power transmission defined in Claim 2
further wherein:

each of said synchronizer clutches is selectively active in at least
one of their respective active positions to establish eight of said forward
5 speeds and said one reverse speed; and

said first synchronizer clutch is in said neutral position, said
second synchronizer clutch interconnects both of said ring gear member and
said planet carrier member of said first planetary gearset with said sun gear
member of said second planetary gearset, and said third, fourth, fifth, sixth,
10 and seventh synchronizer clutches are selectively active in at least one of
their active positions during nine of said forward speed ratios.

5. The multi-speed power transmission defined in Claim 4
further wherein:

said third synchronizer clutch is in the same active position during
sixteen of said forward speed ratios and said reverse ratio.

6. The multi-speed power transmission defined in Claim 2
further wherein:

at least three reverse speed ratios are establishable through said
planetary gearsets and each of said synchronizer clutches is selectively active
5 in at least one of the active positions during each of the three reverse speed
ratios.